Maram Devi Prasanna* et al.
(IJITR) INTERNATIONAL JOURNAL OF INNOVATIVE TECHNOLOGY AND RESEARCH
Volume No.6, Issue No.4, June - July 2018, 8487-8488.

Propose Of Superior Meter For Elegant Grid Using IOT Technology

MARAM DEVI PRASANNA
M. Tech student, Dept of ECE, TRR College of Engineering & Technology, Hyderabad, TS, India.

G RAJENDER
Associate Professor, Dept of ECE, TRR College of Engineering & Technology, Hyderabad, TS, India.

Abstract: **In this paper Wireless Sensor Home Area Network WSHAN) with IOT interfaced wise meter is developed as well as executed. Due to the raising needs on electrical power, standard electrical grid should be changed with smart, durable, reputable and also expensive efficient wise grid applications. Wireless Sensor Networks (WSN) has a vital duty to establish trustworthy as well as pricey efficient wise electrical power grid applications. Our system determines power use logs information live and also reveals time of usage worth's. The system likewise manages any kind of tool attached to power outcomes. While powering on as well as off, zero-cross of Air Conditioner signal is spotted to determine stage change. The wise meter offers right power use as well as transfers information with WIFI to COMPUTER (Personal Computer). The individual checks the power info and also from another location regulates the system.**

Keywords: **Wireless Sensor Networks; Internet Of Things; Smart Grid; Power Grid;**

1. INTRODUCTION

The smart grid manages and distributes electricity in a more efficient, economical, and secure way and it integrates many different technologies, products, services to electric user side appliances with sensing, communications, and control technologies from generation, transmission and distribution. With a smart meter, each device used in buildings and homes can be scheduled, remotely controlled and monitored by smart grid technologies. Designed stand-by power saving smart socket with wireless sensor network which has a similar design for plug system. But the system purposes only control the plug stand-by power. Our goal is that smart meter has an interactive user interface to give system scheduling management. Reference [9] used Bluetooth to implement portable smart meter over smart phone. Design of a smart energy meter with Bluetooth low energy is presented. Reference [1] designed a smart meters that use magnetic flux. Smart energy meter design using GPRS communication is presented. The main objective of the research is developing and testing Our SM offers consumers to read the real time data which give the idea of power consumption real time and pricing information. The other objective is to optimize home energy usage and help home energy cost saving.

2. RELATED STUDY

The New approach of our design is the use of circuit breaker relay which gives the advantage of protection against over voltages. We detect also zero-cross of AC signal to calculate phase shift and turn on and off the devices with solid state relay which gives the advantage of fast switching and high current conducting. We measured power usage of three unit devices which are a LCD TV, satellite receiver and home theater sound system with the same hub. We collected the data and transfer it with the communication path to the coordinator node and stored to the data base successfully.

Smart Grid (SG) with its dynamic model has an exciting potential. Fig. shows evolutionary perspective of SG in past, present and future plans. Also Table I compares the standard grid to SG. SG provides two way communication and energy flow comparing to existing conventional grid. Fig. shows general communication architecture for smart grid from power generation, transmission, distribution to buildings and homes. Smart grid information path starts with broadcasting from sensors or smart devices to smart meters and then passing to the control centers. In communication side the wireless networks are one the most researched area in smart grid power systems. The wireless networks served a couple of advantages in installation and large coverage, but limited bandwidth and interference is the main lacking. While a new ZigBee-based energy meter is detected by the ZigBee coordinator, the coordinator will execute the connection procedures to let the meter join the ZigBee network and then maintain the network for other ZigBee-base energy meter devices. The second task of the coordinator is to communicate with the computer for getting commands from the user and sending data to the database system. The last task of coordinator is to control the ZigBee-base energy meter for reading out data. Figure 4 describes the task of ZigBee-based energy meter devices. The first task is to find a network setup by the ZigBee coordinator, and then try to join the network. If the network is an automatic energy meter reading system, it will join the network. The next task is a power consumption reading from energy meters. As soon as the ZigBee-base energy meter received a command to

read data, it will read data and then send to the ZigBee coordinator

3. AN OVERVIEW OF PROPOSED SYSTEM

Smart meters are electronic measurement devices used by utilities to communicate information for billing customers, track and record customers' electric use and operating their electric systems. With smart meters, sending data to the electricity supplier automatically, there would not be the need to have the meter mounted outside the customer premises. Placing the meters inside a garage or other room would provide a much more protected location and aid in the security of the smart grid. This would require moving or extending the power line terminus from their normal location to the interior which would add considerable expense, and most likely be prohibitive for any extensive smart grid projects. As a matter of fact, for any new homes built in areas with existing smart meters infrastructure, this may be a useful option. Data can be sent wirelessly to an access point at the power pole or via communication over the low voltage power lines.

Fig.3.1. Working model.

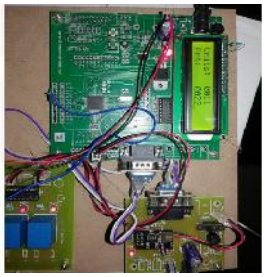

Fig.3.2. Amount and units indication.

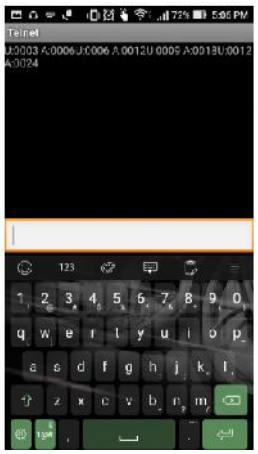

Fig.3.3. Output results across by using TELNET application.

4. CONCLUSION

In this project Wireless Sensor Home Area Network (WSHAN) with IOT interfaced smart meter was designed, implemented and tested. Our system measures energy usage logs data real time and controls any device connected to power outputs. The power usage was measured by the smart meter prototype and the calculated data was transmitted through wifi communication to PC (Personal Computer). With the PC software, scheduling with TOU pricing showed that it creates an economic expenditure for consumer and it's all the same for the utility side. Our contribution is a smart meter system with consumer control in energy saving events corresponding to smart grid concept.

REFERENCES

[1]. Gungor VC, Lu B, Hancke GP. Opportunities and challenges of wireless sensor networks in smart grid. IEEE Transactions on Industrial Electronics. 2010 Oct; 57(10):3557–64.

[2]. Siano P, Cecati C, Citro C, Siano P. Smart operation of wind turbines and diesel generators according to economic criteria. IEEE Transactions on Industrial Electronics. 2011 Oct;58(10):4514–25.

[3]. UnitedStates Department of Energy. Smart Grid System Report, [Online].Available:http://www.doe.energy.gov/ sites/prod/files/oeprod/DocumentsandMedia /SGSRMain_090707_lowres.pdf. July-2009.

[4]. Saputro N, Akkaya K, Uludag S. A survey of routing protocols for smart grid communications. Computer Networks. 2012 July; 56(11):2742–71.

[5]. Farooq H,Tang Jung L. Choices available for implementing smart grid communication network. International Conference on Computer and Information Sciences (ICCOINS). Kuala Lumpur. IEEE; 2014.1–5.

[6]. Mahmood A, Javaid N, Razzaq S. A Review of Wireless Communications for Smart Grid. Renewable and sustainable reviews. 2015 Jan; 41:248–60.

[7]. Erol-Kantarci M, Mouftah HT. Wireless multimedia sensor and actor networks for the next generation power grid Ad Hoc Networks. 2011 Jun; 9(5):542–51.

